STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO

10 May 1989

EXAMINER HEARING

IN THE MATTER OF:

Application of Nearburg Producing Company for an unorthodox oil well location, Lea County, New Mexico.	CASE 9668

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Division:

For Nearburg Producing Company:

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I N D E X

E X H I B I T S

MR. STOGNER: Application of Nearburg Producing Company for an unorthodox oil well location in Lea County, New Mexico.

At this time I'll call for appearances.

MR. HALL: Mr. Examiner, Scott Hall from the Campbell & Black law firm on behalf of Nearburg.

We have two witnesses this morning.

MR. STOGNER: Are there any other appearances? There being none will the witnesses please stand at this time and raise your right hands?

(Witnesses sworn.)

MR. STOGNER: You may be seated.

Mr. Hall?

BILL OWEN,

being called as a witness and being duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. HALL:

Q Please state your name.

A Bill Owen.

Q Mr. Owen, by whom are you employed and where do you live?

A David Petroleum, Roswell, New Mexico.

Q And, Mr. Owen, you've previously testified before the Division or one of its examiners and had your credentials accepted, is that not true?

A Yes.

Q What is David's relationship with Nearburg?

A We're a working interest partner with Nearburg in this area.

Q And are you authorized to speak on behalf of Nearburg?

A Yes.

Q What is it that Nearburg is seeking by this application?

A An unorthodox location.

Q Let's look at Exhibits One and Two. Would you briefly explain those to the hearing Examiner?

A Exhibit One in the green shows the, as well as the yellow, shows the leasehold acreage owned by Nearburg in Section 12. The yellow acreage is the proposed

80-acre unit, Strawn Unit, and the red dot indicates our proposed location.

Q And what is that location?

A Exact footage is 1500 feet from the west and 990 feet from the north.

Q And this completion will be in the Shipp Strawn, is that correct?

A That is correct.

Q Are you familiar with the location requirements for that particular pool?

A Yes.

Q And what are they?

A Be within 150 feet from the center of the quarter quarter section.

Q So you are 180 feet off the perimeter of the circle, is that correct?

A That's correct.

Q Is the location encroaching upon any other production in the area?

A No, it's not. As a matter of fact, it's moving in towards the -- closer to the center of our own acreage.

Q All right, Nearburg acreage, is that correct?

A Correct.

Q Mr. Owen, let me direct your attention to Exhibit Six. Is Exhibit Six the affidavit you've directed your counsel to send out to all interested parties giving notice of this hearing?

A Yes.

Q Were Exhibits One through Six prepared by you or at your direction?

A Yes.

Q Do you have anything further to add?

A No.

MR. HALL: At this point we'd call Mr. Mazzullo and no further questions of Mr. Owen.

CROSS EXAMINATION

BY MR. STOGNER:

Q Mr. Owen, on Exhibit Number One I show the hatched mark green. Now that is David Petroleum there, but now, let's see, did you present Exhibit Number Two at this time Mr. Hall?

MR. HALL: Yes.

Q Okay. Now --

A Yes, Exhibit One and Two both are owned jointly by Nearburg and David Petroleum.

Exhibit Number Two is a common leasehold ownership throughout the entire north half of Section 11.

Q The north half is one common lease.

A Correct.

Q And that is a fee lease, is it?

A That's correct. It's actually about twelve leases but it's all common ownership throughout. It's one family split up in about twelve different members of the family.

Q So that is undivided minerals.

A Undivided mineral interest throughout the north half, that's correct.

Q And you said that belonged to one family?

A Yes.

Q And may I ask who that family is?

A Howenstine, a family out of Oklahoma.

Q And then Exhibit Number Six is the affidavit to Charles Gillespie, Conoco, Mesa and Pennzoil, is that correct?

A I believe that's correct.

Q Okay. And, let's see, are they offsetting in other directions of this proration unit or why were they notified?

A Well, I guess the requirements are any offsetting producers for an unorthodox location need to be notified.

Q Okay.

A That's -- that's what we were doing, is notifying all offset operators.

Q Okay. So Mesa is to the north and west. Gillespie is to the --

A To the west.

Q -- west. Pennzoil is to the north.

A Correct.

Q And where does Conoco show up on this map? Are they to the north and east, I would assume?

A I don't know where Conoco is, to tell you the truth. They are not north and east. We primarily own somewhere in the 95 percent to the 98 percent of the east half of Section 1, so they're not in that tract.

Q Okay. So Nearburg operates the, oh, let's call that the east half of 1?

A That's correct.

Q So Conoco was notified.

A Yes.

Q All right.

A Just to play it safe, just in case they wanted to know.

Q You probably have a Conoco card in your pocket and you wanted to make it safe.

MR. STOGNER: Okay, are there

any questions of this witness?

MR. HALL: Well, if I neglected to do so, I move admission of One, Two and Six.

MR. STOGNER: Exhibits One, Two and Six will be admitted into evidence at this time and I have no other questions of Mr. Owen. He may be excused.

Mr. Hall?

LOUIS MAZZULLO,

being called as a witness and being duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. HALL:

Q Will you please state your name?

A My name is Louis Mazzullo.

Q Mr. Mazzullo, where do you live and by whom are you employed?

A I live in Midland, Texas, and I'm employed as a consulting geologist to Nearburg Producing Company.

Q And you've previously testified before the Division and had your credentials accepted?

A Yes.

Q Are you familiar with the subject appli-

cation and the subject well?

A Yes, I am.

Q Why is this particular location being proposed?

A This particular location is being proposed to be drilled on the optimum location as we determine it from seismic evaluation of the prospect area.

Q All right, and have you prepared certain exhibits to explain?

A Yes, and if I may, I'd like to stand up and do this on the wall. It would be easier.

Q Let's refer to Exhibit Three, if you'd like to start with that.

A Okay. Exhibit Number Three is a structure map which is drawn on the top of the Strawn formation which is the principal reservoir unit that we're dealing with here. This map was constructed on the basis not only of the well control that we have in the area but it was also constructed on the basis of numerous seismic lines that have been interpreted by our geophysicists that cross the area both north/south and east/west.

It shows a number of small to moderate sized closures or structural noses which is -- which are somewhat associated with production from the Strawn in this area. Strawn wells on this map are indicated by the tri-

angles; those are all producing wells out of the Strawn.

Over to the east, southeast of our proposed location is a small closure in the satellite nose associated with production out of Nearburg's two Wright wells, the Wright No. 1 up here in the northeast of the southeast and Wright No. 2 in the southeast of the southeast.

North of the proposed location is a small structure that we've defined seismically, which is associated with production out of the Pennzoil No. 2 Price Family Trust. Now this well, the No. 2 Price Family Trust, is actually a marginal well out of the Strawn. It's got marginal porosity development in it. We believe because it's off the crest of this structure.

The point of this map is to show that we have two -- that we have a small structural closure on the Strawn that we're defining here by coloring red. This small closure is associated probably with porosity development or reefal mound development in the Strawn under the proposed location. It's a structure that's smaller in magnitude than the Pennzoil structure to the north. It's about equivalent in size to the structure that the Wright No. 1 is productive from and what we're attempting to do here by locating the well precisely where it is, is we're locating at the intersection of two seismic lines that are basically

telling us the same thing. They're telling us that there is maximum structural development or advantage at that particular site and it's showing us the same thing on both lines.

If we were to move anywhere away from that proposed location, we wouldn't be in the optimum structural position.

Q All right, let's refer to Exhibit Four, if you'd explain that, please.

A Exhibit Number Four is an isopach map showing the thickness of the Strawn limestone in the area. The stippled patterns on the map refer to possible, areas of possible porosity development somewhere in the Strawn section. It doesn't necessarily have to be at the top of the Strawn, it would be anywhere in the section.

What I'm showing here again is that production here again denoted by triangles, these are all Strawn wells denoted by triangles, production is associated in the Strawn in areas where the Strawn is locally built up, locally thickened. So, for example, these two wells down to the south are productive out of a common reservoir where the thickness of the Strawn exceeds 210 feet.

MR. STOGNER: And you're referring to Wells Nos. 212 and 219.

A 212 and 219 in Sections 14 and 13

respectively.

In the case of the Nearburg Wright Wells, each one of those wells is producing out of a different horizon, so the Wright No. 1 does not produce out of the same horizon that the Wright No. 2 produces out of. Each one of those wells has in excess of 220 feet or more of Strawn section.

Production out of the No. 1 Wright is associated with a small pod of porosity development here.

The Wright No. 2 is associated with a small pod of porosity development there.

In all likelihood either one of those wells are going to define a one-well porosity feature. We probably will have to be pretty hard-pressed to offset either one of those wells.

By the same token, what we are defining as the proposed location is a small pod of porosity development which we believe might be at the top of the section. The location is placed precisely where it is because that is the area where the two seismic lines intersect and it's also the area where we see maximum development of what we believe to be productive porosity that we can define on seismic lines.

This pod here we believe is different from the pod that produces out of the Pennzoil No. 2 Price

Family Trust to the north. We anticipate getting a little bit more than 200 feet of section out of this well, or this location, and now, for future reference, let me call your attention to a line of cross section that I'm going to show here just to clarify the situation from southwest, through this dry hole that we are offsetting at the proposed location, through the location, up to the Price Family 2 and across to our plugged and abandoned Nearburg No. 1 Price Family Trust. That's the next exhibit that's coming up, but for now let me just reiterate that we are offsetting a dry hole. We're offsetting a dry hole in the southwest of the northwest quarter of Section 12, basically one location, and we're trying to optimize our chances of hitting productive porosity by staying at a point where -- locating the well at a point where we have two intercepting seismic lines that are basically telling us the same thing, and we've had considerable experience, good and bad, in this area, which shows us that it doesn't take a whole lot to move off of a productive feature to drill a dry hole. We've documented that very well with the drilling of the No. 1 Howenstine and its sidetrack offset.

MR. STOGNER: And which one is the No. 1 Howenstine?

A The No. 1 Howenstine directly offsets the No. 1 Wright in the north -- in the southeast quarter

of the northeast quarter of Section 12.

So we -- we tried to offset the No. 1 Wright to the north and drilled a dry hole. We drilled a directional well from that dry hole to the southeast and drilled another dry hole.

We then tried to offset the No. 2 Wright by one location to the east, by this well in the southeast -- the southwest quarter of Section 7, the No. 1 Baker, and we drilled a dry hole.

So the locations of these wells have to be precisely -- have to be placed where we might expect the optimum development of porosity and structure and that's why we are so particular about placing that location of the No. 1 Mary Ann State where we have it.

Q Let's go to the cross section.

A Just as a point of reference, to establish how close we believe we may be to productive porosity, again I'm going to show you a cross section that goes from our offset dry hole into the location and up to the Price, Pennzoil Price Well and across the Nearburg Price Well.

MR. STOGNER: And you're referring to the dashed line that runs --

A The dashed line on the -- on both Exhibits Three and Four.

MR. STOGNER: And that's in Sections 1 and 12.

A 1 and 12, exactly. We'll start on the southwest side of the cross section at the offset dry hole, the Shenandoah No. 1 Bumpers Well. The Strawn interval that we're isopaching in Exhibit Four is from the top of the Strawn limestone, as I show on the cross section here, to the top of the Strawn sandstone or the base of the Strawn limestone, which I show here on the cross section.

In the Shenandoah Bumpers we see what appears to be the incipient development of porosity. We're close. We're real close to something developing here. It looks like porosity is just beginning to develop. We anticipate by going the one location or so away from that dry hole at our proposed location, that we'll get into a situation where we will establish porosity. We will see porosity at the top of the section corresponding to this little hint of porosity development in the top of the Bumpers.

As you go across to the Pennzoil Well in Section 1, the southwest quarter of Section 1, we find scattered porosity development that is some 20 or 25 feet below the top of the Strawn. The perforations extend almost to the top of the Strawn but the real porosity development isn't until you're down at this point, so we believe that we're dealing with two isolated, small pods of

porosity, which is typical for this area. These are very small reefal mound bodies. They're very limited in areal extent, one or two well features at the most.

MR. STOGNER: And what did you refer to them as, reefal mounds?

A Reefal mounds.

MR. STOGNER: How does that differ from algal mounds?

A Well, there's a, you know, it's a question of semantics. Let's just call them patch reefs, to be real simple. We'll just call them patch reefs, whatever they're made of.

MR. STOGNER: Okay.

A Okay. As you go to the Pennzoil Trust, we see development of porosity somewhere else in the section. As we go across the section away from the Pennzoil well into the Nearburg No. 1 Price Family Trust, there is no porosity development in the section. It's all material that is far removed -- well, not far removed, it's all off -- off reef material, basinal limestones.

Just as another point of reference, the porosity development that we see in the two Wright wells, the Wright No. 1 and the Wright No. 2 in the east half of Section 12, in the Wright No. 1 the porosity development is way down here in the section, almost at the base of the

Strawn.

In the Wright No. 2 the porosity development is approximately in the same stratigraphic position as it's present in the Pennzoil well. It's at the top of the section.

So the porosity development does change in stratigraphic position from one location -- in may places from one location to the next, literally. That's what we anticipate is happening between these two. It's going to happen between the Pennzoil location and our proposed location, but again we're striving to be -- to pick the optimum drillable location, trying to increase our chance of success by locating precisely at that point.

Q Anything further you wish to add?

A No.

Q Mr. Mazzullo, in view of the fact that the Strawn is typified by the isolated mounds in the area and also due to the fact that you're not encroaching upon any existing production, do you believe that the production from this well should be restricted in any way?

A No, I don't.

Q If the production is restricted, will Nearburg's plans for going forward with the well change at all?

A I would imagine that Nearburg would have

to re-evaluate the economics of drilling at that location if they are restricted.

Q All right. Do you believe that granting the application will be in the best interests of conservation, the prevention of waste, and the protection of correlative rights?

A Yes.

Q And were Exhibits Three, Four and Five prepared by you?

A Yes, they were.

MR. HALL: We'd move the admission of Three, Four and Five. That concludes our direct of this witness.

MR. STOGNER: Exhibits Three, Four and Five will be admitted into evidence.

CROSS EXAMINATION

BY MR. STOGNER:

Q Mr. Mazzullo, now you -- I know you have been up here many times in the past with this same type of testimony and stuff and you have had quite a bit of experience out there in reviewing these algal mounds, reefal mounds, patch reefs, and such structures as appear here.

Do you have a feel about when you review this, review the testimony -- I mean review the informa-

tion and your seismic work and the -- what little downhole information you have, for what it's worth, it appears at times, are you getting any better in interpreting this, because you drilled two dry holes and such as that, or is there any other exploratory methods being used, too? I'll let you --

A Darts. No, there are two basic -- there are two basic philosophies in this area. The primary philosophy in this area is to evaluate seismic, look for seismic, both for seismic development at the top of the Strawn in combination with anomalies on the seismic -- seismic wavelet anomalies in that section where it corresponds to closure on the seismic. That generally corresponds to porosity development, not always, obviously, or else we wouldn't have drilled the dry holes. There are other factors that affect the seismic interpretations, such as the presence of faults that cut the Strawn section that have a way of messing up the seismic signal.

Those you can't -- you can't anticipate and it's very hard to distinguish between the effects of a fault and the effects of porosity development in some cases.

The other philosophy that's used out here is just seat of the pants. It's offsetting known producers and trying to, you know, offset production in

that way. Well, it doesn't always work here because these are very small isolated features. The reason they're so prolific is because they are fractures, large, vertical, open fractures in the system.

The success rate in this area varies anywhere from 30 to 50 percent. We're down on the 30 percent range at this -- at this point, but we have to try to, you know, do everything we can to optimize our locations and the only thing we have to go on in most cases, because things change so radically from location to location, is the seismic, so we place a lot of weight on it, good or bad, you know, right or wrong, we have to place a lot of faith on it because that's the only downhole tool that's proven universally more effective than anything else in this entire area, here and in the Lovington area.

Q Now when I -- I want to refer to Exhibit Number Five, the cross section.

A Uh-huh.

Q And I'm assuming if you took this line on further south and intersected some of the other producing wells --

A Uh-huh.

Q -- we would also see red mounds --

A You would, uh-huh.

Q -- in the Strawn there.

A At different places, in different places, right.

Q And that's what I was leading up to. These mounds as they occur in different places, do they occur at the same time in the Pennsylvanian Age? Do they develop at the same time or what kind of a period do you figure this happened?

A This whole period here probably represents, oh, maybe, maybe a million years of time in which sea level varied back and forth. These are not all deposited at the same time, no, they're not. This here might be older or younger than that one there by several tens of thousands of years, and there are ways that we can tell, you know, there are effective ways you can actually date these things, but that's -- really I don't want to go into that right now.

Q Paleontology, right?

A Yes.

Q Okay, yeah, we don't want to get into that.

A Very detailed; very detailed. But, no, they aren't all developed at the same time and the age relationships among all the various mounds is very complex and it has to do with changes of sea level that went on in this area through time, through that million year time

period. There were many of them.

Q Do you see a patch that may be deposited earlier in the Pennsylvanian Age as opposed to later in the Pennsylvanian Age, do you see any difference with porosity or that much of a difference in the porosity or production that you are looking at here?

A Not yet, no. I don't see any correlation between that at all because basically they've all -- the porosity development in all of these mounds has been by the same basic mechanism, by exposure, sub-areal exposure, exposure during low stands at sea level where the rocks were actually exposed and eroded and that's where you get the huge, open, vertical fractures developed at times like that; kind of like washing them out; they've been washed out.

It's a very complicated area and there really -- everybody, you know, every operator that's in there has got a different theory as to how these things got there and how they developed and how the right -- the right method to go about finding them, but it just comes down to what method you have more faith in, and right now the only thing that we have the most faith in is seismic.

MR. STOGNER: Okay, I have no further questions of Mr. Mazzullo.

Are there any other questions

of this witness?

MR. HALL: No, sir.

MR. STOGNER: He may be excused.

Mr. Hall, do you have anything further?

MR. HALL: No, sir.

MR. STOGNER: Does anybody else have anything further in Case Number 9668?

We're going to take about a 20 to 30 minute break at this time.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C. S. R. DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division (Commission) was reported by me; that the said transcript is a full, true and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 9668, heard by me on 16 May 1989.

Michael E. Stogner, Examiner
Oil Conservation Division